#### NorthWest Arkansas Community College Division of Science & Mathematics

#### **CHEM 2614 Organic Physiological Chemistry**

**Catalog Description:** Organic chemistry survey basic to the understanding of biological systems and related physiological chemistry. Special emphasis placed upon specific biohazardous materials. Three hours lecture and 3 hours laboratory weekly.

**Prerequisite:** CHEM 1024, or CHEM 1075, or CHEM 1104, with a grade of C or better, or equivalent

Credit hours/ Contact hours/ Load hours: 4/6/5

**Target Audience/Transferability:** This course is required by some Agriculture, Food and Life Science majors but may be accepted as a general education requirement for non-science programs as well. This course may meet the needs of students in health profession programs that require a second semester chemistry course with a biochemistry emphasis. Students should check with the transfer institution and specific departments to confirm transferability of this course.

Student Learning Outcomes: Students completing this course should be able to

- Demonstrate increased understanding of scientific methods and principles.
- Describe some more advanced concepts of chemistry and reactions.
- Develop their ability to work with others in a laboratory environment, recognize and record pertinent information, and organize and communicate their results in a form appropriate for both written and oral presentations to others.

### **Required Text:**

Denniston, Topping, and Caret, Organic and Biochemistry, 7<sup>th</sup> edition, 2011 Svoronos, Sarlo, and Kulawiec, Organic Chemistry Laboratory Manual, 2<sup>nd</sup> edition 1997

#### **Topics**:

- An Introduction to Organic Chemistry
- The Saturated Hydrocarbons: Nomenclature and reactions
- The Unsaturated Hydrocarbons: Nomenclature and reactions
- Alcohols, Phenols, Thiols, and Ethers
- Aldehydes and Ketones
- Carboxylic Acids and Derivatives
- Amines and Amides
- Carbohydrates
- Lipids and Their Functions in Biochemical Systems
- Protein Structure and Function
- Enzymes
- Metabolism

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**Required Instructional Activities:** This course includes a required laboratory component. Students are required to compile and maintain a laboratory notebook and complete formal lab reports for each experiment performed.

# • Sample Experiments

- Stereochemistry and Molecular Models
- Melting Point Determination
- Boiling Point Determination
- Simple and Fractional Distillation of a 2-liquid mixture
- Qualitative Tests for Alcohols
- Qualitative Tests for Carbohydrates
- Synthesis of Aspirin
- Preparation and Properties of Soap
- Synthesis of Acetanilide

Forms of Assessment: None